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TRAINING & EDUCATION

INFORMATION MANAGEMENT

BUSINESS PROCESS IMPROVEMENT PROJECT

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UNITED STATES MARINE CORPS
COMBAT DEVELOPMENT COMMAND

TRAINING & EDUCATION
DIVISION

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KEY-BASED DATA MODEL

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SECTION 1
INTRODUCTION

1.1   PURPOSE

The purpose of the Key-based Data Model is to define the current ("AS-IS") data used by the Marine Corps in the Combat Development Process (CDP) as it pertains to Training and Education processes. Emphasis is placed on that data that impacts training program assessment, resource allocation and readiness. The model will provide:

- A basis on which to build a training readiness assessment and resource allocation framework;
- A reference for database design; and
- A definition of T&E entity relationships within the Combat Development Process.

The model was developed within the context of data standardization procedures outlined in various DoD directives[1]. IDEF1X[2] methodology was used to develop the data model.

1.2   BACKGROUND

The Director, Training and Education Division, MCCDC has determined that the allocation of training resources needs to be directly related to mission accomplishment and training readiness. In order to optimize available training resources and minimize the impact of the declining DoD budget on training readiness, it was decided to:

- Consolidate common functions to the maximum extent to achieve economies of scale;
- Maximize the utilization of existing assets through effective command and control;

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[1] See DoD directives 8320.1-M, 8320.1-M-1, 8320-M-x, and FIPS PUB 184.

[2] IDEF1X. IDEF is an acronym for ICAM DEFinition, where ICAM stands for Integrated Computer Manufacturing. The '1' indicates an IDEF data model as opposed to '0' which indicates an activity mode. [IDEF0 is the methodology for developing activity models.] 'X' in IDEF1X stands for eXtended.

- Capitalize on existing and emerging technology, and;
- Achieve the highest degree of readiness at least cost by reducing overhead expenses.

The Marine Corps Training Readiness improvement initiative, which defines and standardizes training readiness reporting, allocates training and education resources according to "value added" to warfighting capability objectives, and eliminates redundant automated information systems, accomplishes all four objectives. It also embodies a primary objective of Marine Corps training and education to maximize the transfer of learning and level of readiness through standardization of performance objectives.

The Marine Corps Training Readiness Support System (MCTRSS) Project was initiated by the Training and Education Division of the Marine Corps Combat Development Command (MCCDC) in an effort to better define and measure training readiness. The MCTRSS project is following the guidelines and structure of the Corporate Information Management (CIM) initiative for improving DoD functional processes.

1.2.1 FUNCTIONAL PROCESS IMPROVEMENT

Functional process improvement is a structured approach DoD has developed to define an organization's "AS-IS" environment and it's objectives and strategy for achieving those objectives. This approach consists of incremental improvements made through functional and technical analysis and decision making. Its goals are to cut costs, improve quality, and increase productivity. The approach essentially combines data and process modeling with financial analysis in evaluating functional process improvement alternatives.

In a Needs Analysis Report published 7 January, 1994, an "AS-IS" Training and Education Activity Model was developed and analyzed. Several improvement opportunities were identified to standardize, streamline, and simplify the training readiness and resource allocation process. An improved functional architecture for training readiness assessment and resource allocation was defined in an Overview Functional Description published 16 May, 1994. The MCTRSS project supports that architecture.

1.3   CONSTRUCTION OF THE DATA MODEL

The MCTRSS Data Model was prepared as recommended in The Federal Information Processing Standards Publication 184 (FIPS PUB 184), *"Integration Definition for Information Modeling (IDEF1X)."*

An expert modeler proficient in the IDEF1X methodology and coincidentally involved in a Joint Service project to standardize data used in the Military Standard 1379D, *"Military Training Programs"*, was selected to facilitate the data model construction.

Training and education experts collected pertinent documents, conducted interviews and held data validation meetings. Primary document sources of input to the model were Marine Corps Order (MCO) P3900.15, *"Marine Corps Combat Development Process"*, MCOs and documents pertaining to training and education, Marine Corps Master Plan, Supporting Establishment Master Plan, Mission Area Analysis reports, *"U. S. Combat Development Process (CDP) Version 1.1, Draft Model"* dated March 10, 1994, MCTRSS *"Training Readiness Needs Analysis Report"* and the IDEF0 Training and Education Activity Model.

The IDEF0 Activity Model components and definitions were analyzed to identify nouns which might represent "things" or entities of interest to the Marine Corps within the scope of MCTRSS and definitions were either located or developed for them. Where possible, existing definitions were used for the entities. For those entities having more than one definition, consensus among experts resulted in the definition used in the model. In cases where an entity had a unique or specific meaning within the scope of MCTRSS, a definition was developed.

Entities and definitions were refined through a series of briefings and interactive presentations with Marine Corps combat development process, education and training, mission area analysis, Marine Corps Master Plan, Marine Corps Lessons Learned and budget experts. These meetings also provided the necessary information to begin establishing relationships among the various entities through the identification of business rules. Business rules are represented in the data

model by relationships which govern the way that entities (things important to the Marine Corps) interact with one another.

The data model was developed in an evolutionary manner. Initially an Entity-Relationship Model, one that merely identifies the entities and the business statements that exist among them, was constructed and distributed to experts for validation. Subsequently the Key-based Data Model, the next level of detail that resolves the business rules into more specific relationships and identifies the primary keys of the entities, was constructed.

In order to facilitate readability and understanding of the data model, it was divided into "views." Each of these views focuses on a specific logical structure centered around the entity for which it is titled. Views allow a more detailed analysis of the entities and the interrelationships within a more specific context.

1.4 OVERVIEW OF DATA MODELING CONCEPTS

A data model is a graphic and textual representation of the data important to an organization to meet its mission. It is an abstract representation of data objects that can be shared and reused across application systems and organization boundaries.

A data model is similar to a blueprint of a house or building. Although developing a blueprint is the job of the architect, reading a blueprint is possible for most people given some understanding of the notation (i.e., language) used to express the information on the blueprint. Likewise, being able to read a data model is relatively easy once the reader has a basic understanding of the notation (or language) used to express the model. Section 1.5 gives a brief introduction to the notation used in the data model.

1.5 IDEF1X OVERVIEW

Although there are a number of notations used in expressing a data model, the one used here is based on the IDEF1X methodology adopted by the DoD for developing standard data models.

An IDEF1X data model is composed of three basic building blocks, reflecting three data modeling concepts: entity, attribute, and relationship[3] An *entity* represents a person, place, thing, event, or concept that is important to the enterprise. *Attributes* represent properties of an entity[4]. A *relationship* is a connection between two entities and describes a business rule of the business[5].

1.5.1 ENTITY AND ATTRIBUTES

In an IDEF1X diagram, an entity is represented by a closed box with the name of the entity at the top and the attributes of the entity listed inside the box (Figure 1-1). Entity names are always singular, naming an instance (singular occurrence) of an entity.

The horizontal line divides the entity into two sets: primary key attributes (top) and data attributes (bottom). The primary key attribute is an attribute or group of attributes that uniquely identify an entity. All remaining attributes are referred to as non-key data attributes.
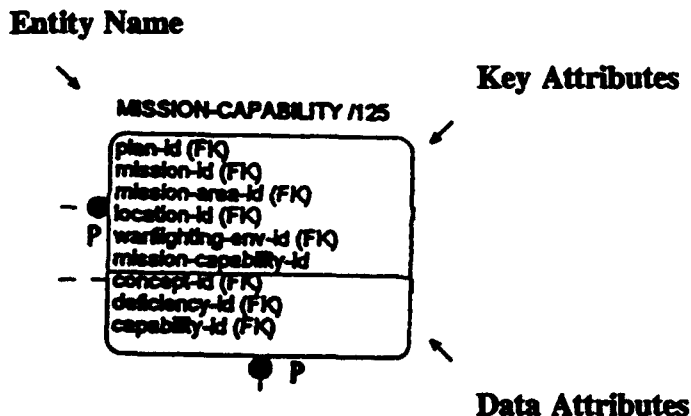
Figure 1-1 Entity with Key and Data Attributes.

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[3] IDEF1X can be viewed as a graphic language for expressing statements about a business. Entities act like nouns, attributes act like adjectives or modifiers, and the relationships act like verbs.

[4] In COBOL terms, an entity would be a record and an attribute a field or data element within the record.

[5] A business rule is a statement of fact that defines constraints and relationships between data elements.

1.5.2 RELATIONSHIPS

Relationships represent connections, links, or associations between entities. They are the verbs of a diagram showing how entities relate to each other. Relationships in a data model represent some of the business rules that describe the area being modeled. Relationships will be binary, i.e., they will connect exactly two entities, creating a parent/child relationship.

The number of entity instances (occurrences of a record) to be expected at each end of the relationship is called the *cardinality* of the relationship. Various symbols will be used to specify how may entity instances may or must be present at the end with the dot. "P" (positive) is used for one or more, nothing for zero or more, and "Z" for zero or one. There is only one entity instance at the end without the dot. Figure 1-2 shows the cardinality syntax.
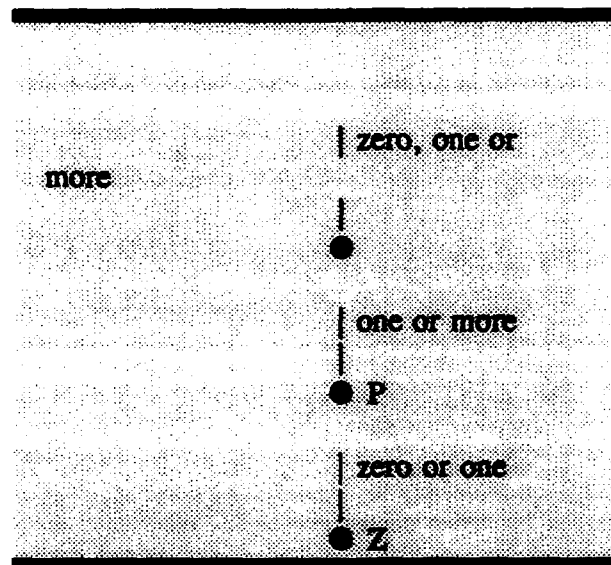

Figure 1-2 Cardinality

In the data model, relationships will be displayed as a line connecting two entities, with a dot on one end and a verb phrase written along the line. The "many" end of the relationship is the end with the dot. Figure 1-3 shows a one-to-many relationship between NEED and ALTERNATIVE-IMPLEMENTATION-SET.
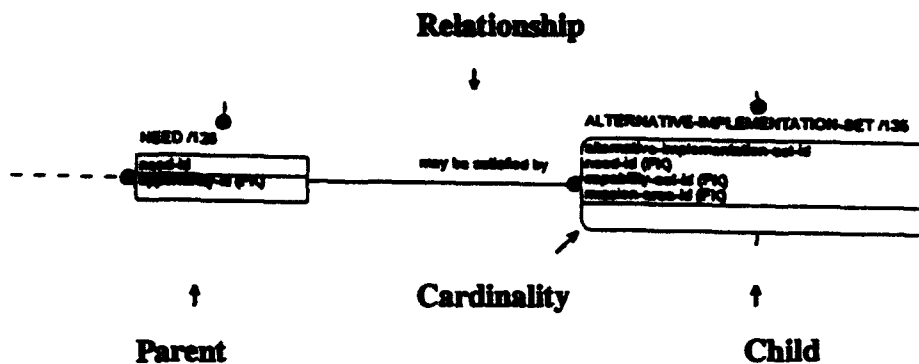
Figure 1-3 Parent/Child Relationship

1.5.3 READING A MODEL

If verb phrases are chosen correctly, a relationship can be read from the parent to the child (toward the end with the dot) using an active verb phrase and thereby come up with a reasonably meaningful English statement. The example in Figure 1-3 can be read as follows:

A NEED may be satisfied by 0 or more ALTERNATIVE-IMPLEMENTATION-SETs.

1.5.4 KEY MIGRATION AND RELATIONSHIP TYPE

Whenever entities are connected by a relationship, the relationship contributes a key (or set of keys) to the child entity. *Foreign key attributes* are primary key attributes of a parent entity contributed to a child entity across the relationship. The contributed keys are said to migrate from parent to child. Foreign key attributes will be designated in the model by a (FK) next to the attribute name. In Figure 1-3 "need id" in NEED migrated to ALTERNATIVE-IMPLEMENTATION-SET.

Two types of relationships will be used in the data model: identifying relationships and nonidentifying relationships. An *identifying relationship* is one in which the primary key of the parent entity becomes part of the primary key of the child entity. It's represented by a solid line

(Figure 1-3). In a nonidentifying relationship primary keys migrate to the child entity but do not become part of the primary key of the child entity. They do become part of the non-key data attributes. It's denoted by a dashed line shown below:
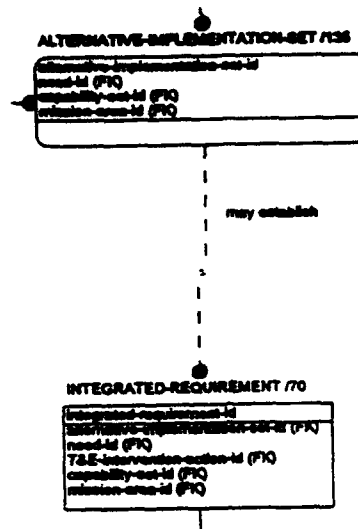
Figure 1-4 Nonidentifying Relationship Syntax

1.5.5   INDEPENDENT AND DEPENDENT ENTITIES

Entities are either independent or dependent. An *independent entity* is one that does not depend on any other entity for its identification. It's represented by a square-corner box. An *dependent entity* is one that depends on one or more entities for identification. It's represented by a rounded box. In Figure 1-4, INTEGRATED-REQUIREMENT is an independent entity, and ALTERNATIVE-IMPLEMENTATION-SET is a dependent entity.

1.5.6   GENERALIZATION ENTITY AND CATEGORY ENTITIES

Figure 1-5 shows an example of a *generalization hierarchy*, a grouping of entities that share common characteristics. DOCTRINAL-RQMNT, ORG-RQMNT, EQUIP-RQMNT, SUPPORT-RQMNT, and T&E-RQMNT share the attributes in INTEGRATED-REQUIREMENT, i.e., attributes in INTEGRATED-REQUIREMENT are common to DOCTRINAL-RQMNT, ORG-RQMNT, EQUIP-RQMNT, SUPPORT-RQMNT, and T&E-

RQMNT. INTEGRATED-REQUIREMENT is the *generalization entity* (generic parent) and DOCTRINAL-RQMNT, ORG-RQMNT, EQUIP-RQMNT, SUPPORT-RQMNT, and T&E-RQMNT are *category entities*. The attribute that determines to which category a generic parent instance belongs is referred to as a *category discriminator*.
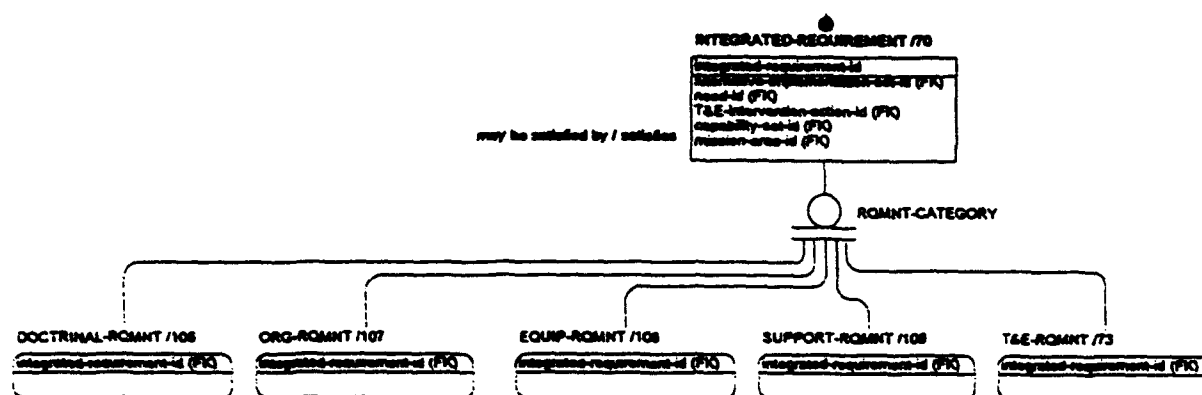
Figure 1-5. Generalization Hierarchy

SECTION 2
GLOSSARY

Alternative Implementation Set

The set of possible solutions that can fill a need. The solution set considers all feasible combinations of Doctrine, Organization, Training, Equipment, and Support (DOTES).

Battlefield Function

A Battlefield Function is one of seven tactical processes or functions (Command, Control and Support; Intelligence; Maneuver; Fires; Air Defense; Mobility/Countermobility/Survivability; and Combat Service Support) that occur over time with out implying how they will be accomplished or what instruments or methods will be used to perform them. The functions provide an operational framework of the battlefield and a standard reference from which collective analysis of mission areas can be conducted during Mission Area Analysis. The functions are adapted from the Army's Battlefield Functions that are explained in detail in TRADOC PAMPHLET 11-9, BLUEPRINT OF THE BATTLEFIELD and are referred to as the BLUEPRINT FOR THE TACTICAL LEVEL OF WAR. Battlefield Functions will be explained in an upcoming revision to FMFM 2, *"Marine Air-Ground Task Force: A Global Capability"*.

Budget

The plan for the allocation of resources that are available for, required for, or assigned to a particular purpose.

Budget Activity

A major functional classification of appropriation type within a budget.

Budget Line Item

The lowest level of appropriation visibility within a budget.

Capability

An ability to achieve an objective, action or task that results from analyzing a concept. Marine Corps capabilities are categorized as operational and functional.

An OPERATIONAL CAPABILITY is the ability to achieve the National Security Strategy responsibilities of the Marine Corps. The Marine Corps has identified the following 8 operational capabilities:

- Command, Control and Surveillance
- Battlespace Dominance
- Power Projection
- Force Sustainment
- Forward Deployment
- Crisis Response
- Strategic Deterrence
- Sealift

A FUNCTIONAL CAPABILITY is the ability to achieve the Marine Corps Strategy set forth in the operational capabilities. Functional capabilities are prioritized in the Marine Corps Master Plan.

A SUPPORTING CAPABILITY is the ability of the Supporting Establishment to support the total force.

Capability Set

A group of related implementing actions from the various requirements categories (doctrine, organization, training and education, equipment, facilities and support) necessary to achieve solutions to deficiencies or to take advantage of opportunities.

Class

One iteration of a course, usually designated numerically.

Collective Standard

Measures of mission performance used to determine whether units can or cannot perform an assigned task. (e.g. collective training standards equate to Mission Performance Standards (MPS) contained in the MCCRES.)

Collective Task

A unit of work or action requiring interaction between two or more individuals for its accomplishment.

Concept

A notion or statement of an idea, expressing how something might be done or accomplished. A concept is broad in scope and pertains to the operational warfighting or major functional areas such as aviation, intelligence and combat service support. These concepts are analyzed to determine those capabilities that will be required to implement the concept. Concepts are characterized as operational or functional.

An OPERATIONAL CONCEPT is a broad statement of an idea in sufficient detail to provide the basis for determining new or revised doctrine, organization, training and education, equipment, or facilities and support. The three current major operational concepts are "Operational Maneuver from the Sea", Sustained Operations Ashore" and "Other Expeditionary Operations."

A FUNCTIONAL CONCEPT is a statement of how the elements of the MAGTF (command, air combat, ground combat, combat service support) operate or will operate in support of each major operational concept.

A SUPPORTING CONCEPT is a broad statement that describes the way in which the Supporting Establishment supports the total force.

Condition

A restricting or modifying factor.

Course

An ordered arrangement of subject matter designed to instruct personnel.

Curriculum

The planned content for a course of instruction.

Deficiency

A shortcoming in some aspect of a required capability, as specified in the Marine Corps Master Plan, identified through analysis, assessment or the formal studies program.

Delivery System

The instructional method and media used to present the instruction.

Doctrinal Program

Packaged Marine Corps requirements and the means to achieve them that are established to implement a fundamental principle which guides the Corps actions in support of national objectives.

Doctrinal Requirement

An established need based on a validated deficiency in the ability of the Marine Corps to carry out a fundamental principle which guides the Corps actions in support of national objectives.

Drill

A battle/tactical exercise designed to prepare a unit or team to perform a tactical technique or procedure through progressive repetition. It is used, principally, to train small units to perform tasks requiring a high degree of teamwork, such as fire and maneuver actions in danger areas, and counter-ambush techniques.

Equipment Program

Packaged Marine Corps requirements and the means to achieve them established to provide non-expendable items needed to outfit/equip an individual or organization in order to meet missions.

Equipment Requirement

An established need based on a validated deficiency in the ability of the Marine Corps to provide non-expendable items needed to outfit/equip an individual or organization.

Exercise

Training events conducted under simulated combat conditions in which troops and armament of one side are actually present. Forces or equipment of the opposition may be either imagined or partially or fully present.

Functional Capability

See CAPABILITY.

Functional Concept

See CONCEPT.

Individual Task

A composite of related activities performed for an immediate purpose by an individual.

Individual Job Task

A specific combination of an INDIVIDUAL TASK that makes up a JOB. A JOB must be associated with at least one and possibly many INDIVIDUAL TASKs.

Individual Standard

Level of proficiency to which a Marine must perform a task.

Instructional Setting

The environment in which instruction or learning will occur.

Integrated Program

Packaged Marine Corps requirements to meet missions linked to the means (e.g. materiel, human resources) to achieve them.

Integrated Requirement

A capability that satisfies a doctrinal, organizational, training and education, equipment or/and facilities and support need that has been identified as a deficiency or opportunity. The INTEGRATED REQUIREMENT is the optimal combination of DOTES elements that has been selected.

Intervention Alternative

A potential "solution" or plan to correct a "real" need. It may c   of the purchase of new equipment, of providing additional training, of altering the present methods of training or any other viable means of correcting the deficiency.

Job

The combination of all human performance required for one personnel position in a system. (e.g., driver).

Job Aid

A checklist, procedural guide, decision table, worksheet, algorithm, or other tool used by job incumbents to aid in task performance.

Knowledge

Information required to perform an activity for the effective accomplishment of a task.

Learning Objective

A statement of the behavior or performance expected as a result of a learning experience.

Location

A region of the world for which plans are developed.

Military Manpower Training Report (MMTR) Training Category

One of five classifications of individual training (Recruit, Officer Acquisition, Specialized Skill, Flight, and Professional Development Education) used by OSD and Congress for planning, programming and budgeting purposes.

Mission

A task, together with a purpose, which clearly indicates the action which is to be taken and the reason therefor.

Mission Area

A grouping of related functions which together support the accomplishment of a mission. There are currently 12 Mission Areas.

Mission Capability

A required ability to accomplish a mission supporting a concept of operations.

Need

Lack of something required or desirable.

Occupational Field

A range of related Military Occupational Specialties (MOSs).

Operational Capability

See CAPABILITY.

Operational Concept

See CONCEPT.

Opportunity

The recognition of a current or conceptual capability that if expanded upon would enhance battlefield success.

Organization

An administrative structure with a mission.

Organizational Program

A packaged Marine Corps requirement linked to the means to achieve an improvement in an administrative structure that has a mission.

Organizational Requirement

An established need based on a valid deficiency in an administrative structure with a mission.

Person

A human being.

Plan

A detailed scheme or method for the accomplishment of an objective.

Program Element

A major classification of appropriations within the DoD Program Objectives Memorandum (POM) and Future Years Defense Plan (FYDP).

Resource

An asset required or made available to an organization to accomplish a purpose.

Skill

The ability to perform an action.

Standard

An exact value, a physical entity, or an abstract concept, established and defined by authority, custom, or common consent to serve as a reference, model, or rule in measuring quantities or qualities, establishing practices or procedures, or evaluating results. A fixed quantity or quality.

Support Program

Packaged Marine Corps support requirements linked to the means to achieve them.

Support Requirement

An established support need based on a validated deficiency justifying the timely allocation of resources to achieve a capability to accomplish approved military objectives, missions, or tasks.

Supporting Capability

See CAPABILITY.

Supporting Concept

See CONCEPT.

T&E Capability Set

One of the eight classifications of individual training (Recruit, Officer Acquisition, Specialized Skill, Mission-oriented, Flight, Professional Military Education, Marine Battle Skills and Related) used internally in the Training and Education Division for planning, programming and budgeting purposes.

T&E Intervention Action

An action taken to correct a T&E deficiency or to take advantage of a T&E opportunity.

T&E Program

Packaged Marine Corps training and education requirements linked to the means to achieve them that are needed to meet a mission.

T&E Requirement

Any identified training and education need based on a validated deficiency justifying the allocation of resources to achieve a capability to accomplish approved military objectives, missions or tasks.

Task

A composite of related activities performed for an immediate purpose. (Activities are perceptions, decisions, and responses in a single unit of work and are written in operator/maintainer language, e.g. "change a tire.")

Test

Any device or technique used to measure performance.

Test Item

A performance measure.

Training Event

An occurrence such as a wargame, exercise or drill which supports training.

Training Facility

A permanent or semi-permanent government, military, or contractor real property used for the purpose of supporting or conducting training.

Training Material

Weapons, equipment, tools, supplies and systems used for training and education purposes.

Training Objective

A goal of a training event.

Training Plan

A document that outlines the general plan for the conduct of individual and collective training in an organization.

Training Task

A task or job-task identified to be trained.

Unit

Any military element whose structure is prescribed by competent authority, such as a table of organization and equipment: specifically, part of an organization.

Unit Mission

A specific combination of one UNIT with one MISSION. A UNIT must be associated with at least one and possibly many MISSIONs.

Unit Mission Task

A unique identification of one TASK to be performed by a UNIT in the conduct of a specific MISSION. A UNIT with a specific MISSION must be associated with at least one and possibly many TASKs.

Wargame

Battle simulations, both manual and computer-assisted.

Warfighting Environment

The anticipated conflict environment that covers the spectrum of conflict as defined in CJCS MOP 50. The current environments are; Peace Through Confrontation (PTC), Lesser Regional Conflict (LRC), Major Regional Conflict (MRC), Theater Nuclear War (TNW) and General Nuclear War (GNW).

SECTION 3

BUSINESS RULES

Business rules[6] applicable to the Key-based Data Model are presented in the following table. The table includes a row for each relationship defined on the data model. A row contains the parent and child entities, the verb phrase, and a statement of the relationship.

Parent Entity	Verb Phrase	Child Entity	Business Rule
ALTERNATIVE-IMPLEMENTATION-SET	may establish	INTEGRATED-REQUIREMENT	An ALTERNATIVE-IMPLEMENTATION-SET may establish 0 or more INTEGRATED-REQUIREMENTs.
ALTERNATIVE-IMPLEMENTATION-SET	is grouped by	CAPABILITY-SET	An ALTERNATIVE-IMPLEMENTATION-SET is grouped by 1 CAPABILITY-SET.
BATTLEFIELD-ACTIVITY	is an element of	MISSION-AREA	A BATTLEFIELD-ACTIVITY is an element of 1 or more MISSION-AREAs.
BATTLEFIELD-ACTIVITY	is composed of	TASK	A BATTLEFIELD-ACTIVITY is composed of 1 or more TASKs
BUDGET	is comprised of	BUDGET-LINE-ITEM	A BUDGET is comprised of 1 or more BUDGET-LINE-ITEMs.
BUDGET	is a plan for	RESOURCE	A BUDGET is a plan for 1 or more RESOURCEs.
BUDGET	allocates resources for	INTEGRATED-PROGRAM	A BUDGET allocates resources for 1 or more INTEGRATED-PROGRAMs.
BUDGET-ACTIVITY	classifies	BUDGET-LINE-ITEM	A BUDGET-ACTIVITY classifies 1 or more BUDGET-LINE-ITEMs.
CAPABILITY	satisfies	MISSION-CAPABILITY	A CAPABILITY satisfies 1 or more MISSION-CAPABILITies

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[6]   A business rule is an english language statement of fact that defines the relationships and constraints that the functional environment places on data.

Parent Entity	Verb Phrase	Child Entity	Business Rule
CAPABILITY-SET	groups	ALTERNATIVE-IMPLEMENTATION-SET	A CAPABILITY-SET groups 1 or more ALTERNATIVE-IMPLEMENTATION-SETs.
CLASS	is iteration of	COURSE	A CLASS is an iteration of 1 or more COURSEs.
CLASS	is conducted in	INST-SETTING	A CLASS is conducted in 1 or more INST-SETTINGs.
CLASS	may support	TRAINING-EVENT	A CLASS may support 1 or more TRAINING-EVENTs.
COLLECTIVE-STANDARD	is derived from	COLLECTIVE-TASK	A COLLECTIVE-STANDARD is derived from 1 or more COLLECTIVE-TASKs.
COLLECTIVE-TASK	is measured by	COLLECTIVE-STANDARD	A COLLECTIVE-TASK is measured by 0 or more COLLECTIVE-STANDARDs.
CONCEPT	drives	MISSION-CAPABILITY	A CONCEPT drives 1 or more MISSION-CAPABILITies.
COURSE	has	CLASS	A COURSE has 1 or more CLASSes.
COURSE	may be part of	CURRICULUM	A COURSE may be part of 1 or more CURRICULUM.
COURSE	is presented through	DELIVERY-SYSTEM	A COURSE is presented through 1 or more DELIVERY-SYSTEMs.
COURSE	is built to teach	JOB	A COURSE is built to teach 1 or more JOBs.
COURSE	is attended by	PERSON	A COURSE is attended by 1 or more PERSONs.
COURSE	is validated using	TEST	A COURSE is validated using 1 or more TESTs.
COURSE	teaches	TRAINING-TASK	A COURSE teaches 1 or more TRAINING-TASKs.
CURRICULUM	contains	COURSE	A CURRICULUM contains 1 or more COURSEs.
CURRICULUM	may be part of	T&E PROGRAM	A CURRICULUM may be part of 0 or more T&E PROGRAMs.
DEFICIENCY	is a shortcoming in	MISSION-CAPABILITY	A DEFICIENCY is a shortcoming in 1 or more MISSION-CAPABILITies.

Parent Entity	Verb Phrase	Child Entity	Business Rule
DEFICIENCY	generates	NEED	A DEFICIENCY generates 1 or more NEEDs.
DELIVERY-SYSTEM	is used to present	COURSE	A DELIVERY-SYSTEM is used to present 1 or more COURSEs.
DELIVERY-SYSTEM	is part of	TRAINING-MATERIEL	A DELIVERY-SYSTEM is part of 1 or more TRAINING-MATERIEL.
INDIVIDUAL-JOB-TASK	is comprised of	INDIVIDUAL-TASK	A specific INDIVIDUAL-JOB-TASK is comprised of 1 or more INDIVIDUAL-TASKs.
INDIVIDUAL-JOB-TASK	comprises	JOB	An INDIVIDUAL-JOB-TASK comprises 1 or more JOBs.
INDIVIDUAL-JOB-TASK	is measured by	INDIVIDUAL-STANDARD	An INDIVIDUAL-JOB-TASK is measured by 1 or more INDIVIDUAL-STANDARDs.
INDIVIDUAL-STANDARD	measures	INDIVIDUAL-JOB-TASK	An INDIVIDUAL-STANDARD measures 1 or more INDIVIDUAL-JOB-TASKs.
INDIVIDUAL-STANDARD	is converted to	LEARNING-OBJECTIVE	An INDIVIDUAL-STANDARD is converted to 1 or more LEARNING-OBJECTIVEs.
INDIVIDUAL-TASK	may be part of	INDIVIDUAL-JOB-TASK	An INDIVIDUAL-TASK may be part of 1 or more INDIVIDUAL-JOB-TASKs.
INST-SETTING	is environment for	CLASS	An INST-SETTING is an environment for 1 or more CLASSes.
INST-SETTING	is part of	TRAINING-FACILITY	An INST-SETTING is part of 0 or 1 TRAINING-FACILITies.
INTEGRATED-PROGRAM	is resourced by	BUDGET	An INTEGRATED-PROGRAM is resourced by 0 or more BUDGETs.
INTEGRATED-PROGRAM	satisfies	INTEGRATED-REQUIREMENT	An INTEGRATED-PROGRAM satisfies 1 or more INTEGRATED-REQUIREMENTs.
INTEGRATED-PROGRAM	satisfies	T&E-INTERVENTION-ACTION	An INTEGRATED-PROGRAM satisfies 0 or more T&E-INTERVENTION-ACTIONs.

Parent Entity	Verb Phrase	Child Entity	Business Rule
INTEGRATED-REQUIREMENT	may be satisfied by	INTEGRATED-PROGRAM	An INTEGRATED-REQUIREMENT may be satisfied by 0 or more INTEGRATED-PROGRAMs.
INTEGRATED-REQUIREMENT	may result from	TRAINING-PLAN	An INTEGRATED-REQUIREMENT may result from 1 or more TRAINING-PLANs.
INTEGRATED-REQUIREMENT	is satisfied by	T&E-INTERVENTION-ACTION	An INTEGRATED-REQUIREMENT is satisfied by 0 or more T&E-INTERVENTION-ACTIONs
INTERVENTION-ALTERNATIVE	may be a	T&E-INTERVENTION-ACTION	An INTERVENTION-ALTERNATIVE may be 0 or more T&E-INTERVENTION-ACTIONs.
JOB	determines content of	COURSE	A JOB determines the content of 1 or more COURSEs.
JOB	is comprised of	INDIVIDUAL-JOB-TASK	A JOB comprises 1 or more INDIVIDUAL-JOB-TASKs.
JOB	may be accomplished using	JOB-AID	A JOB may be accomplished using 0 or more JOB-AIDs.
JOB	may be contained in	OCC-FIELD	A JOB may be contained in 0 or 1 OCC-FIELDs.
JOB-AID	may be used to accomplish	JOB	A JOB-AID may be used to accomplish 1 or more JOBs.
KNOWLEDGE	is required to accomplish	TASK	KNOWLEDGE is required to accomplish 1 or more TASKs.
LEARNING-OBJECTIVE	is derived from	INDIVIDUAL-STANDARD	A LEARNING-OBJECTIVE is derived from 1 or more INDIVIDUAL-STANDARDs.
LEARNING-OBJECTIVE	is correlated to	TEST-ITEM	A LEARNING-OBJECTIVE is correlated to 1 or more TEST-ITEMs.
LOCATION	may be associated with	PLAN	A LOCATION may be associated with 0 or more PLANs.
MISSION	requires	MISSION-CAPABILITY	A MISSION requires 1 or more MISSION-CAPABILITies.
MISSION	may be	UNIT-MISSION	A MISSION may be 0 or more UNIT-MISSIONs.

Parent Entity	Verb Phrase	Child Entity	Business Rule
MISSION-AREA	contains	BATTLEFIELD-ACTIVITY	A MISSION-AREA contains 1 or more BATTLEFIELD-ACTIVITies.
MISSION-AREA	may support	MISSION	A MISSION-AREA may support 1 or more MISSIONs.
MISSION-CAPABILITY	is the means to implement	CONCEPT	A MISSION-CAPABILITY is the means to implement 1 or more CONCEPTs.
MMTR-TRAINING-CATEGORY	classifies	T&E PROGRAM	A TRAINING-CATEGORY classifies 1 or more T&E PROGRAMs.
NEED	may be satisfied by	ALTERNATIVE-IMPLEMENTATION-SET	A NEED may be satisfied by 0 or more ALTERNATIVE-IMPLEMENTATION-SETs.
OCC-FIELD	is comprised of	JOB	An OCC-FIELD is comprised of 1 or more JOBs.
OPPORTUNITY	improves	CAPABILITY	An OPPORTUNITY improves 1 or more CAPABILITies.
OPPORTUNITY	generates	NEED	An OPPORTUNITY generates 0 or mores NEEDs.
ORGANIZATION	has	BUDGET	An ORGANIZATION has 1 or more BUDGETs.
ORGANIZATION	requires	RESOURCE	An ORGANIZATION requires 1 or more RESOURCEs.
ORGANIZATION	has	PERSON	An ORGANIZATION has 1 or more PERSONs.
ORGANIZATION	may participate in	TRAINING-EVENT	An ORGANIZATION may participate in 0 or more TRAINING-EVENTs.
ORGANIZATION	has	TRAINING-PLAN	An ORGANIZATION has 0 or more TRAINING-PLANs.
ORGANIZATION	has	UNIT	An ORGANIZATION has 1 or more UNITs.
PERSON	attends	COURSE	A PERSON attends 0 or more COURSEs.
PERSON	is assigned to	ORGANIZATION	A PERSON is assigned to 1 or more ORGANIZATIONs.
PERSON	participates in	TRAINING-EVENT	A PERSON participates in 0 or more TRAINING-EVENTs.

Parent Entity	Verb Phrase	Child Entity	Business Rule
PLAN	dictates	MISSION	A PLAN dictates 1 or more MISSIONs.
PROGRAM-ELEMENT	has	BUDGET-LINE-ITEM	A PROGRAM-ELEMENT has 1 or more BUDGET-LINE-ITEMS.
SKILL	may be required to accomplish	TASK	A SKILL may be required to accomplish 1 or more TASKs.
STANDARD	measures	CAPABILITY	A STANDARD measures 1 or more CAPABILITies.
STANDARD	is conducted under	CONDITION	A STANDARD is conducted under 1 or more CONDITIONs.
STANDARD	guides	TRAINING-EVENT	A STANDARD guides 0 or more TRAINING-EVENTs.
STANDARD	is used to evaluate	UNIT-MISSION-TASK	A STANDARD is used to evaluate 1 or more UNIT-MISSION-TASKs.
T&E-CAPABILITY-SET	classifies	T&E-PROGRAM	A T&E-CAPABILITY-SET classifies 1 or more T&E-PROGRAMs.
T&E-INTERVENTION-ACTION	is satisfied by	INTEGRATED-PROGRAM	A T&E-INTERVENTION-ACTION is satisfied by 1 or more INTEGRATED-PROGRAMs.
T&E-INTERVENTION-ACTION	may be satisfied by	INTEGRATED-REQUIREMENT	A T&E-INTERVENTION-ACTION may be satisfied by 1 or more INTEGRATED-REQUIREMENTs.
T&E-INTERVENTION-ACTION	is an	INTERVENTION-ALTERNATIVE	A T&E-INTERVENTION-ACTION is 1 or more INTERVENTION-ALTERNATIVEs.
T&E-INTERVENTION-ACTION	may be	TRAINING-EVENT	A T&E-INTERVENTION-ACTION may be 0 or more TRAINING-EVENTs.
T&E PROGRAM	may have	CURRICULUM	A T&E PROGRAM may have 0 or more CURRICULUMs.
T&E PROGRAM	uses	TRAINING-MATERIEL	A T&E PROGRAM uses 1 or more TRAINING-MATERIEL.
T&E RQMNT	is addressed by	T&E-INTERVENTION-ACTION	T&E RQMNT is addressed by 1 or more T&E-INTERVENTION-ACTIONs.

Parent Entity	Verb Phrase	Child Entity	Business Rule
TASK	requires	KNOWLEDGE	A TASK requires one or more KNOWLEDGE.
TASK	may require	SKILL	A TASK may require 0 or more SKILLs.
TASK	is a	TRAINING-TASK	A TASK is 1 or more TRAINING-TASKs.
TASK	supports	UNIT-MISSION-TASK	A TASK supports 1 or more UNIT-MISSION-TASKs.
TEST	may be used to validate	COURSE	A TEST may be used to validate 1 or more COURSEs.
TEST	is comprised of	TEST-ITEM	A TEST is comprised of 1 or more TEST-ITEMs.
TEST-ITEM	is derived from	LEARNING-OBJECTIVE	A TEST-ITEM is derived from 1 or more LEARNING-OBJECTIVEs.
TEST-ITEM	is included in	TEST	A TEST-ITEM is included in 1 or more TESTs.
TRAINING-EVENT	may be a	CLASS	A TRAINING-EVENT may be 0 or more CLASSes.
TRAINING-EVENT	may occur in	ORGANIZATION	A TRAINING-EVENT may occur in 1 or more ORGANIZATIONs.
TRAINING-EVENT	includes	PERSON	A TRAINING-EVENT includes 1 or more PERSONs.
TRAINING-EVENT	may be developed using	STANDARD	A TRAINING-EVENT may be developed using 0 or more STANDARDs.
TRAINING-EVENT	may be	T&E-INTERVENTION-ALTERNATIVE	A TRAINING-EVENT may be 0 or more T&E-INTERVENTION-ALTERNATIVEs.
TRAINING-EVENT	may be included in	TRAINING-PLAN	A TRAINING-EVENT may be included in 0 or more TRAINING-PLANs.
TRAINING-FACILITY	supports	TRAINING-EVENT	A TRAINING-FACILITY supports 1 or more TRAINING-EVENTs.
TRAINING-MATERIEL	may include	DELIVERY-SYSTEM	TRAINING-MATERIEL may include 1 or more DELIVERY-SYSTEMs.

Parent Entity	Verb Phrase	Child Entity	Business Rule
TRAINING-MATERIEL	is used by	T&E PROGRAM	TRAINING-MATERIEL is used by 1 or more T&E PROGRAMs.
TRAINING-OBJECTIVE	is contained in	TRAINING-PLAN	A TRAINING-OBJECTIVE is contained in 1 or more TRAINING-PLANs.
TRAINING-OBJECTIVE	is specified by	TRAINING-TASK	A TRAINING-OBJECTIVE is specified by 1 or more TRAINING-TASKs.
TRAINING-PLAN	may result in	INTEGRATED-REQUIREMENT	A TRAINING-PLAN may result in 0 or more INTEGRATED-REQUIREMENTs.
TRAINING-PLAN	is developed by	ORGANIZATION	A TRAINING-PLAN is developed by 1 or more ORGANIZATIONs.
TRAINING-PLAN	may contain	TRAINING-EVENT	A TRAINING-PLAN may contain 1 or more TRAINING-EVENTs.
TRAINING-PLAN	contains	TRAINING-OBJECTIVE	A TRAINING-PLAN contains 1 or more TRAINING-OBJECTIVEs.
TRAINING-TASK	specifies training for	TRAINING-EVENT	A TRAINING-TASK specifies training for 0 or more TRAINING-EVENTs.
TRAINING-TASK	is derived from	TRAINING-OBJECTIVE	A TRAINING-TASK is derived from 1 or more TRAINING-OBJECTIVEs.
UNIT	has	UNIT-MISSION	A UNIT has 1 or more UNIT-MISSIONs.
UNIT	is part of	ORGANIZATION	A UNIT is part of 1 or more ORGANIZATIONs.
UNIT MISSION	is supported by	UNIT-MISSION-TASK	A UNIT-MISSION is supported by 1 or more UNIT-MISSION-TASKs.
UNIT-MISSION-TASK	is evaluated using	STANDARD	A UNIT-MISSION-TASK is evaluated using 1 or more STANDARDs.
UNIT-MISSION-TASK	comprises	TASK	A UNIT-MISSION-TASK comprises 1 or more TASKs.
WARFIGHTING-ENVIRONMENT	dictates	PLAN	A WARFIGHTING-ENVIRONMENT dictates 0 or more PLANs.

SECTION 4

KEY-BASED DATA MODEL

This Section presents the Overview Data Model and four "views" to help understand the relationship between data entities and attributes.

As stated in the U.S. Marine Corps Combat Development Process, Version 1.1, Draft Model dated March 10, 1994.

"The Marine Corps Combat Development Process (CDP) is a process which formulates battlefield requirements and produces combat-ready Marine Air-Ground Task Forces (MAGTFs) based upon fundamental concepts supported by interdependent systems for development of doctrine, training and education, organization, equipment, and facilities and support."

"The USMC is committed to improved integration of the Marine Corps Combat Development Process. The CDP encompasses all activities needed to produce combat-ready Marine Air-Ground Task Forces (MAGTF's)--from development of operational concepts to fielding and sustainment of resources. The CDP extends across virtually all organizations of the Marine Corps and other Service functions participating in the development of MAGTF's. The CDP also influences and is influenced by other Service combat development processes to ensure interoperability in the Joint arena."

The Marine Corps retains its razor sharp, highly mobile, force-in-readiness character by continually evolving and adapting. Therefore, the Marine Corps is constantly reevaluating its capabilities, looking at more effective ways to prepare and train its personnel, and developing enhanced uses for it equipment. This innovative mindset ensures the Corps is always relevant and able to respond when the Nation's interests are challenged.

The Marine Corps Training Readiness Support System (MCTRSS) is an integral part of the Combat Development Process. It will standardize training readiness assessment and link training resource allocation directly to warfighting requirements and training readiness.

The data model identifies data requirements and relationships needed to establish a decision support data base. The Overview Data Model, View 1, emphasizes data that impact training program assessment, resource allocation, and readiness within the Combat Development Process. Views 2 through 5 depict the data relationships centered around CDP/Mission, Concept, Program and Task respectively.

In order to show the relationship of data entities supporting training readiness assessment and resource allocation, it was necessary to expand the view of the model outside of the "traditional" boundaries of Training and Education to include the CDP. Within the model, some "many-to-many" relationships were intentionally left as "many-to-many" since resolving those relationships into "one-to-one" or "one-to-many" is beyond the scope of this task.

Prior to data base design, a Fully Attributed Data Model in specific assessment and resource allocation processes needs to be developed.

4.1 CDP/MISSION VIEW
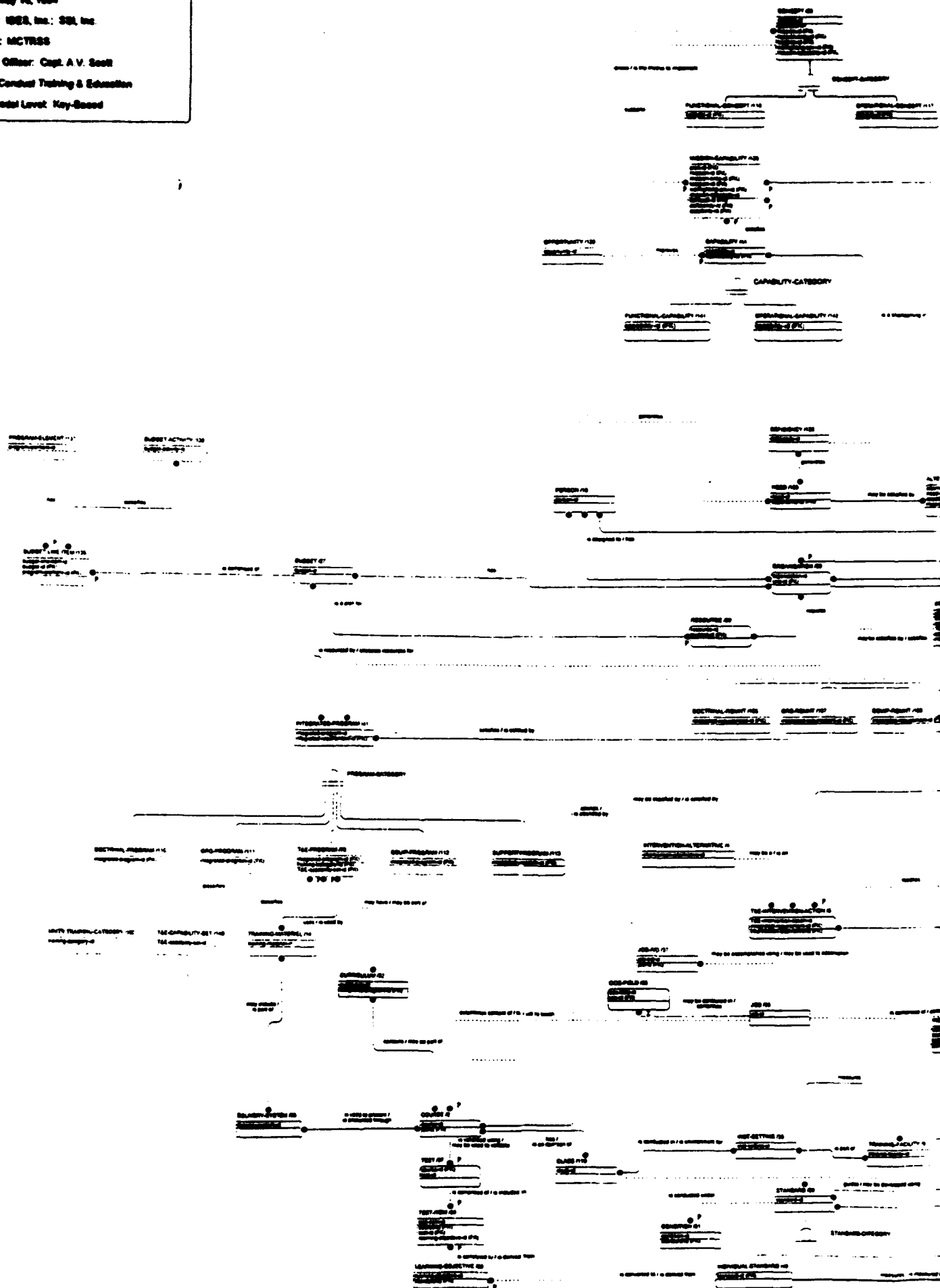
The Combat Development Process is evolving. It is a process which formulates battlefield requirements and produces combat ready MAGTF's based on fundamental concepts supported by interdependent systems for development of doctrine, training/education, organization, equipment and facilities/support. The process is used to identify problems, find solutions, and then to ensure that solutions are fielded and monitored so they continue to meet the needs of the operating forces. The CDP is composed of three systems. The Concept Based Requirements System (CBRS) begins with the development of operational and functional concepts and leads to the identification of required combat capabilities. The Solution Development System (SDS) assesses and meets the requirements. The Capability Support System (CSS) reviews, maintains, and updates the capability throughout its life cycle.

Executive Order A-109 of April 5, 1976 states that "(d)etermination of mission need should be based on analysis of an agency's mission reconciled with overall capabilities, priorities and resources." The order further states that "(a) mission need may result from a deficiency in existing agency capabilities or the decision to establish new capabilities in response to technologically feasible opportunity."

DoD Instruction 5000.2 of April 23, 1991 directs that the DoD components's requirements generation systems focus on identifying deficiencies in current capabilities and opportunities to provided new capabilities. The instruction states that deficiencies and opportunities will be described in terms of broad operational capability needs and evaluated to determine if they can be satisfied by nonmaterial solutions including changes to operational doctrine, concepts, tactics training, and/or organization.

Marine Corps Mission Area Analysis (MAA) is the systematic examination of the Marine Corps' capability to execute its mission. Within 12 defined Mission Areas (MA), this analysis measures present and projected capabilities, identifies operational deficiencies/opportunities, prioritizes deficiencies, and recommends/categorizes corrective action.

Battlefield Functions provide an operational framework of the battlefield. They provide continuity and a standard reference from which collective analysis of mission areas can be conducted. The seven Battlefield Functions are:

- Maneuver;
- Fires;
- Air Defense;
- Command, Control and Support;
- Intelligence;
- Mobility, Countermobility and Survivability; and,
- Combat Service Support.
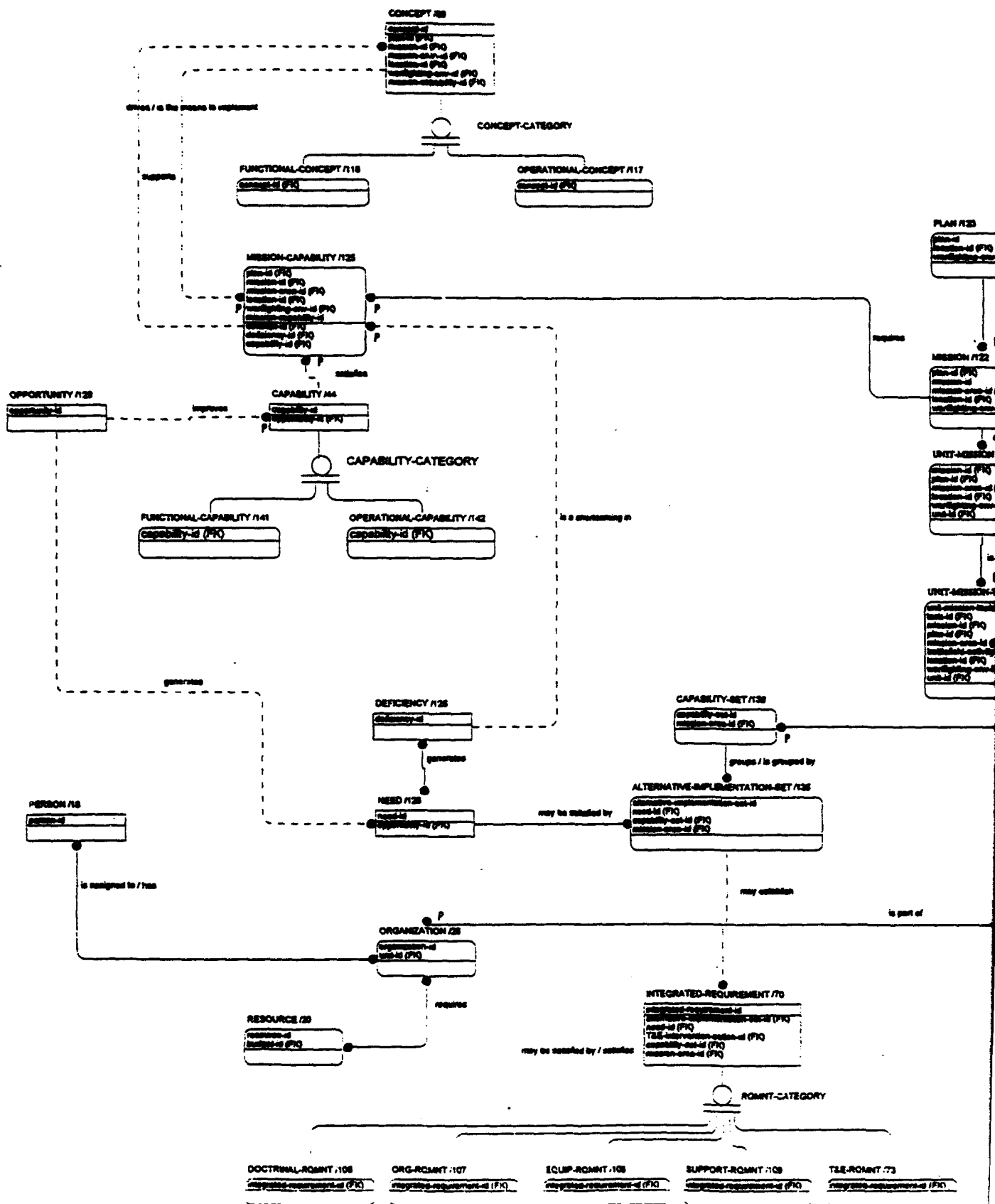
CDP/MISSION VIEW
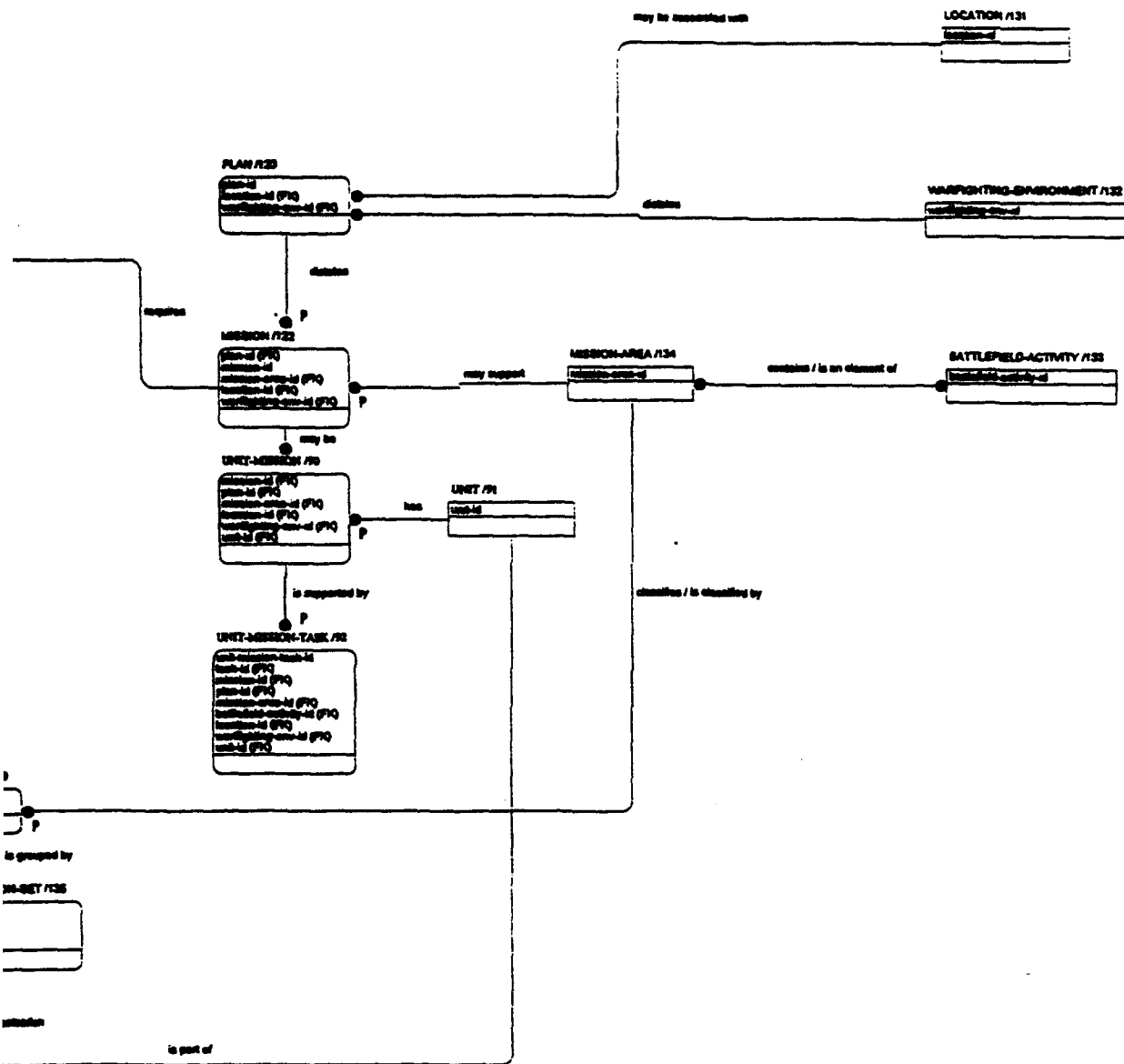
LOCATION /131

may be associated with

PLAN /120

WARFIGHTING-ENVIRONMENT /132

MISSION /122

MISSION-AREA /134

BATTLEFIELD-ACTIVITY /133

may support

contains / is an element of

UNIT-MISSION /70

UNIT /71

may be

has

classifies / is classified by

is supported by

UNIT-MISSION-TASK /82

is grouped by

is part of

4.2   CONCEPT VIEW

Concepts define how the Marine Corps operates now or how it will operate in the future. They are broad in scope and pertain to operational warfighting, the major functional areas and Supporting Establishment warfighting support. Concepts are developed in response to changes in the global threat, the National Military Strategy, and higher level guidance. Operational concepts describe the way in which the USMC conducts operations. The three current major operational concepts are "Operational Maneuver from the Sea", Sustained Operations Ashore" and "Other Expeditionary Operations." Functional concepts describe the way in which the elements of the MAGTF (command, air combat, ground combat, combat service support) perform in support of each major operational concept. Supporting Establishment concepts describe the way in which the Supporting Establishment supports the total force. Special concepts are all other concepts (including operational and functional subconcepts) needed to carry out the mission of the Marine Corps.

Capabilities are abilities to achieve objectives that result from analyzing a concept. Capabilities may be characterized the same way as concepts: operational, functional, supporting and special. Near to mid-term combat development is based on goals and capability objectives that are prioritized in the Marine Corps Master Plan and the Supporting Establishment Master Plan. This prioritized list of capability objectives is used as a basis for planning, programming, and budgeting for actions that must be taken to correct deficiencies and shortcomings.

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CONCEPT /49

concept-id
(PK)
concept-id (FK)
need-id (FK)
mission-capability-id (FK)

drives / is the means to implement

supports

CONCEPT-CATEGORY

FUNCTIONAL-CONCEPT /116   OPERATIONAL-CONCEPT /117
concept-id (FK)   concept-id (FK)

MISSION-CAPABILITY /125

mission-id (FK)
mission-area-id (FK)
function-id (FK)
warfighting-area-id (FK)
capability-id (FK)
mission-id (FK)
capability-id (FK)

satisfies

OPPORTUNITY /129   CAPABILITY /44
opportunity-id   capability-id
                          opportunity-id (FK)

supports

CAPABILITY-CATEGORY

FUNCTIONAL-CAPABILITY /141   OPERATIONAL-CAPABILITY /142
capability-id (FK)   capability-id (FK)

is a shortcoming in

generates

DEFICIENCY /126
deficiency-id

generates

NEED /128   may be satisfied by   ALTER
need-id
opportunity-id (FK)

DOCTRINAL-RQMNT /106   ORG-RQMNT /107   EQUIP-RQMNT /108
integrated-requirement-id (FK)   integrated-requirement-id (FK)   integrated-requirement-id (FK)

4-11

requires

MISSION /122

CAPABILITY-SET /139

groups / is grouped by

ALTERNATIVE-IMPLEMENTATION-SET /135

may be satisfied by

may establish

INTEGRATED-REQUIREMENT /70

is a shortcoming in

RQMNT-CATEGORY

EQUIP-RQMNT /108   SUPPORT-RQMNT /109   T&E-RQMNT /73

1

4.3   PROGRAM VIEW

During Mission Area Analysis, the differences between required capabilities and current/existing and future/projected capabilities, are identified as deficiencies and prioritized. Opportunities, the recognition of current or conceptual capability that if expanded upon would enhance battlefield success, are also identified and prioritized. The identified deficiencies and opportunities are addressed as follows:

- A needs statement is drafted;
- The need is analyzed from the perspective of doctrine, organization, training and education, equipment, and support and facilities;
- Alternative implementation solutions (sets) to the need are identified;
- A solution is selected and approved by higher authority;
- The approved solution is placed in the Requirements Catalog;

Training and education requirements are processed through the Training Development Process. Like the CDP, the Training Development Process is also evolving. Depending on the magnitude of the requirement, various actions are initiated:

- The requirement is analyzed;
- Intervention alternatives are considered;
- Alternatives are analyzed for impact on other areas (Doctrine, Organization, Equipment, Support);
- A Training and Education intervention is recommended;
- The intervention is approved by higher authority; and,
- The approved intervention enters PPBS as a FYDP Program.

The Marine Corps PPBS organization and procedures are designed to reduce a complex, unstructured situation into its essential elements, organizing those elements into a logical and consistent format and communicating the results effectively. This system explicitly integrates the expertise and professional judgement of the military officer and senior defense executive with

a rational decision process and applicable tools and techniques. The objective is to provide a framework for better decision making in a complex resource allocation problem.

Planning forces and fiscal guidance constraints are translated into achievable packages called Programs. Programming finds the best match between warfighting requirements which have become programming objectives (mission requirements) and the means (financial, human, material) to fulfill them.

Budgeting is the actual execution of plans and programs; the application of available resources to recruit, train, retain, equip and house Marines, and maintain the Marine Corps. It is an iterative process. Each decision or action in any phase affects all other phases.

PROGRAM VIEW
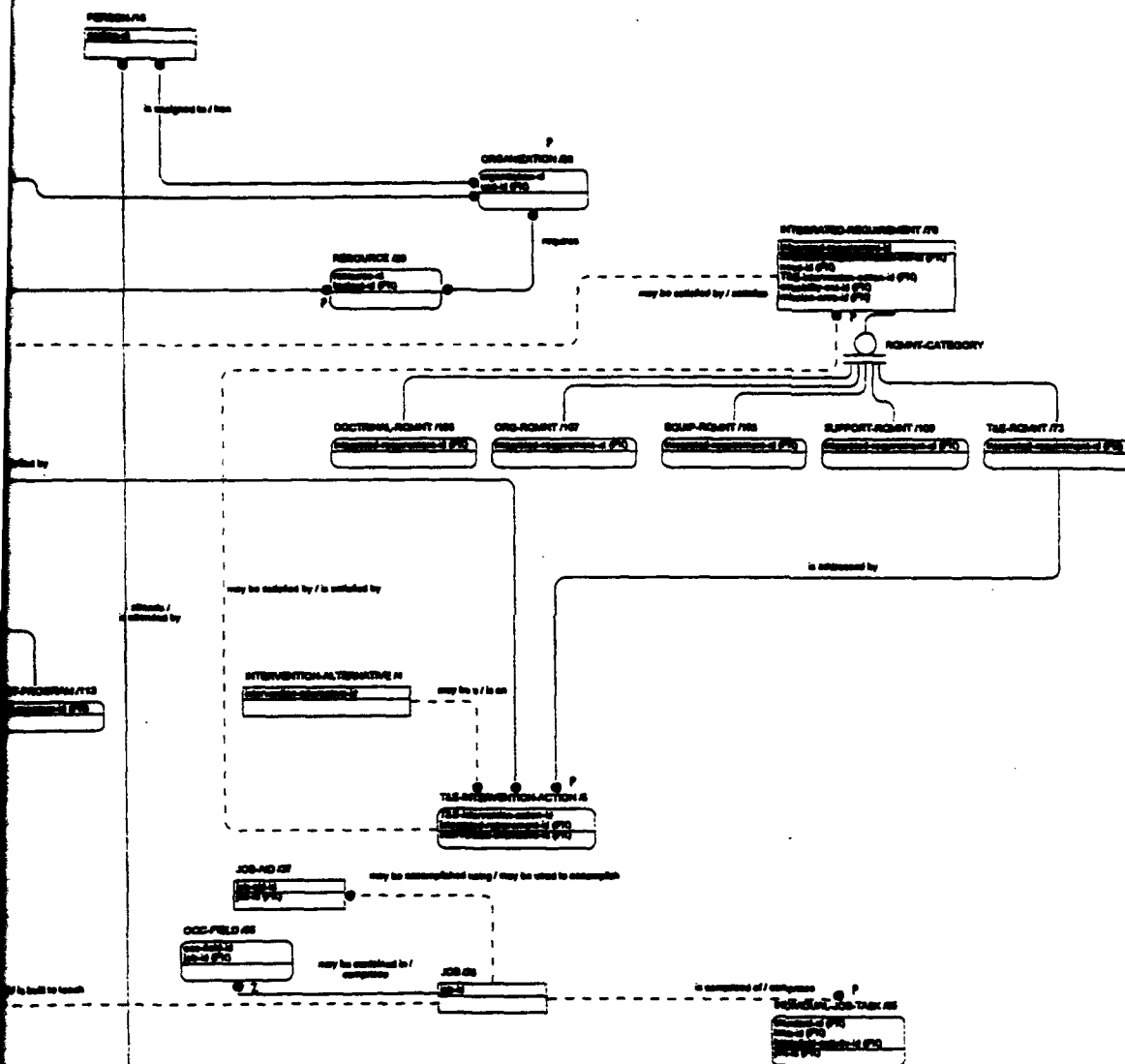
4.4   TASK VIEW

Peacetime training requirements focus on a unit's combat mission. Focusing on combat requirements recognizes that proficiency cannot be achieved on every training task. However, commanders can achieve a successful training program by consciously narrowing the focus to a reduced number that are essential to mission accomplishment. These tasks make up the Mission-Essential Task List (METL).

All organizations from force to battalion/squadron level prepare METLs. Command groups and staff elements at each level develop METLs to address mission-essential tasks in their areas of responsibility. Each organization's METL is approved by the next higher commander in the operational chain of command. Command group METLs are approved by the commander. Staff METLs are approved by the organization's commander or chief of staff.

For unit training, the unit mission is analyzed to determine what needs to be done and whether or not individuals and units in the organization are organized and/or trained to carry out the mission. A training plan is designed and developed to ensure that the mission can be accomplished.

For individual training, determining required skills and what the job holder must know or do is accomplished using a systematic research process called Front-End Analysis (FEA). FEA involves the identification, collection, collation and analysis of job performance data and results in a comprehensive list of tasks and performance requirements for instructional development.

The entire training system and all training programs are built around standards. Training standards establish the tasks that units and individual Marines are expected to be capable of performing, define proficiency, and serve as a means of diagnosing training deficiencies. Since all training standards are derived from the specific mission requirements of the Marine Corps and developed using current doctrine, they ensure that all Marines are being trained to perform activities which are oriented towards actual combat.

Collective training standards are measures of unit mission performance and are published as Mission Performance Standards (MPS). These standards are derived from and developed by incorporating current doctrinal techniques and procedures. MPSs prescribe the specific tasks that a unit must be capable of performing in order to execute a particular mission. They should be closely aligned to mission essential tasks.

Performance requirements for all Occupational Field Specialties are defined by Individual Training Standards (ITS). ITSs are the basis for all individual instruction in units and in formal schools/training centers. ITSs specify measures of performance that are to be used in analyzing individual performance and evaluating individual instruction. Most ITSs are derived from the MCCRES MPSs and prescribe those individual tasks that a Marine must be able to perform (within MOS/grade) in order for the unit to successfully execute MPS.

KNOWLEDGE /86

knowledge-id

SKILL /84

skills-id

INDIVIDUAL-JOB-TASK /85

standard-id (FK)
task-id (FK)
battlefield-activity-id (FK)
job-id (FK)

INST-SETTING /35

inst-setting-id

is part of

TRAINING-FACILITY /9

training-facility-id

is conducted under

STANDARD /29

standard-id

guides / may be developed using

CONDITION /31

condition-id
standard-id (FK)

STANDARD-CATEGORY

INDIVIDUAL-STANDARD /48

standard-id (FK)

measures / is measured by

COLLECTIVE-STANDARD /94

standard-id (FK)
task-id (FK)
battlefield-activity-id (FK)

4-19

TRAINING-PLAN /93

training-plan-id
organization-id (FK)
unit-id (FK)

may contain / may be included

contains / is contained in

P

TRAINING-OBJECTIVE /92

training-objective-id
training-plan-id (FK)
organization-id (FK)
unit-id (FK)

is specified by / is derived from

P

TRAINING-TASK /91

training-task-id
task-id (FK)
battlefield-activity-id (FK)
training-objective-id (FK)
course-id (FK)

specifies training for

requires / is required to accomplish

P

is a

TASK /56

task-id
battlefield-activity-id (FK)

may require / may be required to accomplish

TASK-CATRGORY

INDIVIDUAL-TASK /88

task-id (FK)
battlefield-activity-id (FK)

COLLECTIVE-TASK /87

task-id (FK)
battlefield-activity-id (FK)

may be part of / is comprised of

supports

is measured by / is derived from

P

TRAINING-EVENT /95

training-event-id
training-plan-id (FK)
organization-id (FK)
class-id (FK)
unit-id (FK)

TRAINING-EVENT-CATEGORY

EXERCISE /103

training-event-id (FK)

DRILL /104

training-event-id (FK)

WARGAME /105

training-event-id (FK)